

Misdiagnosis of Type 1 Diabetes 38% of The Time

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Study found misdiagnosis of type 1 common, with half of those misdiagnosed still being treated as though they had type 2 diabetes 13 years later.

Late-onset type 1 diabetes can be difficult to identify. Measurement of endogenous insulin secretion using C-peptide provides a gold standard classification of diabetes type in longstanding diabetes that closely relates to treatment requirements. This study aimed to determine the prevalence and characteristics of type 1 diabetes defined by severe endogenous insulin deficiency after age 30 and assess whether these individuals are identified and managed as having type 1 diabetes in clinical practice.

The study assessed the characteristics of type 1 diabetes defined by rapid insulin requirement (within 3 years of diagnosis) and severe endogenous insulin deficiency (non-fasting C-peptide <200 pmol/l) in 583 participants with insulin-treated diabetes, diagnosed after age 30, from the Diabetes Alliance for Research in England (DARE) population cohort. They compared characteristics with participants with retained endogenous insulin secretion (>600 pmol/l) and 220 participants with severe insulin deficiency who were diagnosed under age 30.

The results showed that twenty-one per cent of participants with insulin-treated diabetes who were diagnosed after age 30 met the study criteria for type 1 diabetes. Of these participants, 38% did not receive insulin at diagnosis, of whom 47% self-reported type 2 diabetes. Rapid insulin requirement was highly predictive of severe endogenous insulin deficiency: 85% required insulin within 1 year of diagnosis, and 47% of all those initially treated without insulin who progressed to insulin treatment within 3 years of diagnosis had severe endogenous insulin deficiency. Participants with late-onset type 1 diabetes defined by development of severe insulin deficiency had similar clinical characteristics to those with young-onset type 1 diabetes. However, those with later onset type 1 diabetes had a modestly lower type 1 diabetes genetic risk score (0.268 vs 0.279; $p < 0.001$), a higher islet autoantibody prevalence (GAD-, islet antigen 2 [IA2]- or zinc transporter protein 8 [ZnT8]-positive) of 78% at 13 years vs 62% at 26 years of diabetes duration; ($p = 0.02$), and were less likely to identify as having type 1 diabetes (79% vs 100%; $p < 0.001$) vs those with young-onset disease.

The study found a third of those they analyzed were not given insulin; instead they received medication indicated for those with type 2 diabetes. Further analysis found that half of those misdiagnosed were still being treated as though they have type 2 diabetes 13 years later.

From the results it was shown that type 1 diabetes diagnosed over 30 years of age, defined by severe insulin deficiency, has similar clinical and biological characteristics to that occurring at younger ages, but is frequently not identified. Clinicians should be aware that patients progressing to insulin within 3 years of diagnosis have a high likelihood of type 1 diabetes, regardless of initial diagnosis.

In the U.S. as well, the National Institute for Health and Care Excellence (NICE) doesn't recommend rigorous testing to differentiate between type 1 and type 2 diabetes. We know that providing type 2 treatment of tablets for those with type 1 diabetes is not effective, as they need insulin.

This study highlights how common misdiagnosing the type of diabetes in adults can be. One high-profile case saw U.K. Prime Minister Theresa May misdiagnosed. She was given type 2 diabetes tablets and lifestyle advice which did not work, and it was only once she was re-tested that doctors discovered she actually had type 1 diabetes.

If people with type 1 diabetes don't receive insulin they can develop very high blood glucose and may develop ketoacidosis. This means having the right diagnosis is vitally important even if insulin treatment has already been started.

A further problem with long-standing misdiagnosis of type 1 is that consistently high glucose levels, from not having the right treatment, can greatly increase the risk of developing additional long-term complications such as amputation and heart, eye, kidney and nerve disease. These complications significantly impact upon quality of life as well as presenting significant cost for the care.

This research prompts greater consideration of which type of diabetes is present following a diagnosis of diabetes.

Practice Pearls

- Researchers found that nearly 40% of adults with type 1 diabetes had been misdiagnosed and initially received treatment for type 2 diabetes.
- When diagnosed with diabetes, it is critical to determine the type of diabetes, as it will determine the type of treatment.
- The 2 most common tests to determine type of diabetes are testing for autoantibodies that target insulin (Insulin autoantibodies [IAA]) that are common in type 1 diabetes, or a C-peptide test.

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